

**Patent Claims**

1. Process for the production of spherical nickel hydroxide by anodic dissolution of a nickel electrode and precipitation of nickel hydroxide in a completely intermixed electrolysis cell, characterised in that an electrolysis brine is used which has a content of 20 to 50 g/l of chloride ions and 1 to 7 g/l of ammonia with a pH value of 9.5 to 11.5 and a temperature of 45 to 60°C.
2. Process according to claim 1, characterised in that, before introduction into the electrolysis cell, the electrolysis brine is adjusted to a pH value of 10 to 10.5 by addition of alkali metal hydroxide or hydrochloric acid.
3. Process according to claim 1 or 2, characterised in that the circulation rate of the brine is at least 20 cm/s.
4. Process according to any one of claims 1 to 3, characterised in that the molar ratio of chloride ions to ammonia is 2 to 10.
5. Process according to any one of claims 1 to 4, characterised in that the average residence time of the electrolysis brine in the cell is 1 to 5 hours.
6. Process according to any one of claims 1 to 5, characterised in that one or more doping metal ions from the group comprising Co, Zn, Mg, Cu, Cr, Fe, Sc, Y, La, lanthanoids, B, Ga, Mn, Cd and Al are continuously introduced into the electrolysis.
7. Process according to any one of claims 1 to 6, characterised in that brine containing dispersed nickel hydroxide powder is discharged from the cell, the nickel hydroxide powder is separated and the brine is returned to the electrolysis cell.

- 5 8. Process according to any one of claims 1 to 7, characterised in that brine containing dispersed nickel hydroxide powder is discharged from the electrolysis cell and introduced into a downstream electrolysis cell, wherein the further electrolysis cell has anodes made of metallic cobalt.
- 10 9. Process according to claim 8, characterised in that brine containing nickel hydroxide powder coated with cobalt hydroxide is discharged from the electrolysis cell containing metallic cobalt, the nickel hydroxide powder is separated and the brine is returned to the electrolysis cell with nickel electrodes.
- 15 10. Process according to claim 6, characterised in that the doping element ions are produced by anodic oxidation of the corresponding metals.
- 20 11. Use of the nickel hydroxide powder produced according to any one of claims 1 to 10 as an electrode material in secondary storage batteries.
12. Use of the nickel hydroxide powder produced according to any one of claims 1 to 10 as a precursor material for the production of ultrafine powdered metallic nickel.

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